## CLAIMS:

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- 1. A method of predicting the occurrence of critical events in a computer cluster having a series of nodes, said method comprising:
- maintaining an event log that contains information concerning critical events that have occurred in the computer cluster;
- 5 maintaining a system parameter log that contains information 6 concerning system parameters for each node in the cluster; and
- predicting a future performance of a node in the cluster based upon said event log and said system parameter log.
  - 2. The method of claim 1 comprising developing a Bayesian network model that represents said computer cluster and said nodes based upon the information in said event log and said system parameter log.
  - 3. The method of claim 1 wherein maintaining said system parameter log comprises recording a temperature of a node in the cluster and a corresponding time value.
- 4. The method of claim 1 wherein maintaining said system parameter log comprises recording a utilization parameter of a central processing unit of a node in the cluster and a corresponding time value.
  - 5. The method of claim 1 comprising filtering said event log and said system parameter log such that some critical event information and some system parameter information is not maintained in said event log and said system parameter log.

- 1 6. The method of claim 1 comprising using a time-series mathematical model to predict future values of said system parameters.
- 7. The method of claim 1 comprising using a rule based classification system to predict future critical events based upon said critical event information and said system parameter information.
- 8. The method of claim 1 wherein the step of predicting comprises forming a warning window for each node in the cluster such that said warning window contains a predicted performance parameter or critical event occurrence for the node for a predetermined future period of time.

1	9. A method of improving the performance of a computer cluster having
2	a series of nodes comprising:
3	monitoring the occurrence of critical events in said nodes in said
4	computer cluster;
5	monitoring system performance parameters of said nodes in said
6	computer cluster;
7	creating a node representation for each node in said computer cluster
8	based upon said monitoring;
.8	creating a cluster representation based on said node representations;
10	periodically examining said node representations to predict future node
11	performance; and
12	using said cluster representation to redistribute tasks among said nodes
13	based upon said predicted node performance.
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1	10. The method of claim 9 wherein creating said cluster representation
2	and said node representation comprises creating a Bayesian Network that
3	represents relationships between the occurrence of said critical events and
4	said system performance parameters.

11. The method of claim 9 comprising saving information concerning

12. The method of claim 11 comprising filtering said saved information to remove information wherein said removed information is not determined to be useful in predicting a future performance of said nodes.

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- 13. The method of claim 9 comprising applying a time-series
  mathematical model to said system performance parameters to predict future
  values of said system performance parameters.
- 1 14. The method of claim 13 wherein said time series mathematical 2 model is one of an auto regression, a moving average and an autoregressive 3 moving average model.
- 1 15. The method of claim 9 comprising using rule based classifications 2 to associate some system performance parameters with occurrence of said 3 critical events.
- 16. The method of claim 9 wherein said system performance
  parameters concern at least one of a node temperature, processor utilization
  value, network bandwidth and available memory space.

<ol><li>17. An information processing system comprising:</li></ol>
a computer cluster having a series of nodes;
a control system for monitoring critical events that occur in said
computer cluster and system parameters of said nodes;
a memory for storing information related to said occurrence of said
critical events and said system parameters of said nodes; and
a Bayesian Network model for predicting a future occurrence of a
critical event based upon an observed relationship between said system
parameters and said occurrence of critical events.
18. The information processing system of claim 17 comprising a filter

1 19. The information processing system of claim 17 wherein said 2 Bayesian Network comprises a time-series modeler for predicting future 3 values of said system parameters.

for removing redundant information from said stored information.

- 20. The information processing system of claim 17 wherein said
  Bayesian Network comprises a rule based classification system for associating
  said system parameters with said occurrences of said critical events.
- 21. The information processing system of claim 17 comprising a
  dynamic probe generator for determining when to collect additional information
  concerning said system parameters or said critical event occurrence.

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